



## ***In silico and in vitro* analysis of structure based designed peptides on TrkB receptor of Ov-car-3 and Sk-ov-3 cell lines**

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### **ABSTRACT**

Tropomyosin receptor kinase B (Trk B) is one of the significant oncogen proteins. Over-expression of Trk B was occurs in thyroid, ovarian and prostate cancers and multiple myeloma. The interaction of BDNF/TrkB leads to activation of angiogenesis and proliferation pathways in tumor cell lines. The aim of this study is design of novel peptides as TrkB inhibitor. At first, the peptide library was generated by backrub protocol, and then the binding of the designed peptides with TrkB was investigated by molecular Docking. In the experimental evaluation cytotoxic and apoptotic effects of designed peptides on Sk-ov-3 and Ov-car-3 cell lines were assessed by MTT and Annexin -PI staining flowcytometry techniques, respectively. The expression of phosphorylated and un-phosphorylated AKT, EIF4E and MAPK proteins was compared in TrkB signaling pathway by using western-blotting. The designed peptides induced cytotoxicity on Sk-ov-3 and Ov-car-3 cell lines and showed inhibitory effects on their TrkB signaling pathway in cell lines. From the sort of designed and tested peptides the peptide II is more effective than the others and they are efficient in development of anticancer drugs.

**Key words:** Backrub protocol; Docking; Peptides; Sk-ov-3; TrkB receptor; Ov-car-3